

SIEMENS

PATENT
Attorney Docket No. 2002P12570WOUS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Inventor:	T. Bosselmann et al.)	
)	Group Art Unit: 2831
Serial No.:	10/533,014)	
)	Examiner: Thomas F. Valone
Filed:	April 28, 2005)	Confirmation No. 1667

Title: TURBO ENGINE WITH CONDITION MEASURING ELEMENT

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Sir:

APPELLANT'S REPLY BRIEF UNDER 37 CFR 41.41

Pursuant to 37 C.F.R. § 41.41, this Reply Brief is responsive to the Examiner's Answer mailed 05 March 2009 in which the Examiner raised new points of argument and introduced statements which result in such potential for confusion as to warrant filing of this reply. This is not a substitute for the Appeal Brief. Any ground for rejection in the Examiner's Answer that is not refuted herein is considered by Appellant to have been sufficiently argued in the Appeal Brief, such that no further comment is needed herein.

It is error for the Examiner to mischaracterize the description of Deegan. More particularly, the Examiner's Answer at page 6, lines 8-10 purports that Deegan teaches spectrum analysis of the electromagnetic signal and filtering in the kilohertz frequency range. The foregoing statement is not consistent with the description of Deegan. For the convenience of the

Board, Appellant will proceed to quote specific excerpts of Deegan that contradict the foregoing assertion by the Examiner.

Deegan at col. 1, lines 1-3:

This invention uses low frequency electromagnetic emissions rather than the previous techniques of vibration analysis alone or simply waiting for functional failure.

Deegan at col. 1, lines 11-13

The novelty of this invention is the use of the very low frequencies of ions and ion-laden particulate in the exhaust stream to measure the output of ions from structural and blade materials.

Deegan at col. 1, lines 52-54

The emission can be measured with a simple antenna and radio receiver tuned to the extremely low frequency of such emissions.

Deegan at col. 2, lines 1-10

This force causes each ion to radiate at the cyclotron frequency or gyrofrequency determined by:

$$\text{frequency} = \frac{\text{charge} \times \text{magnetic field}}{2 \pi \times \text{mass}}$$

This radiation is detected by the present invention. A few of the ions produced by hydrocarbon combustion in air and their gyrofrequencies for the typical earth magnetic field of 40,000 nanoteslas are listed in Table 1.

TABLE 1

Aircraft Fuel Combustion Ions and Gyrofrequencies					
Ion	Mass Number	Freq (Hz)	Ion	Mass Number	Freq (Hz)
C ⁺	12	53.1	S ⁺	32	19.9
CH ⁺	13	49.0	C3H3 ⁺	39	16.3
CH2 ⁺	14	45.5	C3H7 ⁺	43	14.8
OH ⁺	17	37.5	CHO2 ⁺	45	14.2
H2O ⁺	18	35.4	Ti ⁺	48	13.3
C2 ⁺	24	26.5	V ⁺	51	12.5
C2H2 ⁺	26	24.5	Cr ⁺	52	12.3
CO ⁺	28	22.8	Mn ⁺	55	11.6
NO ⁺	30	21.2	Fe ⁺	56	11.4
CH3O ⁺	31	20.5	Co ⁺	59	10.8

Deegan at col. 2, lines 27-29

The list [shown in Table 1 above] illustrates the fact that the gyrofrequencies of combustion ions are low and the heavier ions of the metals of the engine's structure are lower.

Deegan at col. 3, lines 7-10

Referring to FIG. 1, there is shown a block diagram of the soot measurement device. It has a sensor 2, that is a simple antenna suitable for detecting the very low cyclotronic and mechanically activated frequencies of the soot.

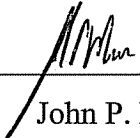
Compare the foregoing (sensor 2 for detecting very low frequencies (<20 Hz as shown in Table 1)) to the language recited in claim 21 “a measuring element operating in a kilohertz frequency range . . .” and recited in claim 32 “measuring the electric or magnetic field strength by a measuring element operating in a kilohertz frequency range”.

It is error for the Examiner to disregard the teaching away aspects of Deegan discussed in Appellant's Brief and alluded to above. More particularly, the Examiner's Answer at page 11, lines 15-16 asserts that “the Deegan reference is used simply to provide an explicit teaching of . . .” . The implied corollary of such an assertion being that the Examiner can disregard other portions of the reference. This position of the Examiner is incorrect and inconsistent with the M.P.E.P. See M.P.E.P. 2141.02 VI. A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984)

Respectfully submitted,

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